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A REPORT OF BOSTON'S ATTEMPT TO ASCERTAIN RESULTS OF GEOGRAPHY TEACHING*

LAST year an effort was made to measure the educational results of some phases of the instruction in geography by giving a test to fourteen eighth grade classes in as many different schools, to four high school classes in four different schools, and to the eighty-six members of the first-year class in the Normal School. The test was prepared with a view of ascertaining:

(a) The character of the geographical knowledge of the pupils tested;

(b) The ability of the pupils tested to reason from geographical data;

(c) The relative adequacy of their knowledge of the general geographical features of the United States and Europe; and

(d) Whether scientific measurement of educational results in geography is possible.

Information on the above points is of value not only from the standpoint of measuring educational results, but it is particularly valuable at this time when a revision of the course of study is under way. It was desirable to find out, even if in a limited way, whether there is such a scattering of teaching effort in trying to follow the present course of study as to indicate the need of establishing a minimum requirement for each grade.

It is obvious that a forty-five minute test can cover only a limited field of geography. Therefore, the test was confined to the most important countries of the world, viz., the United States and the countries of Europe.

The preparation of a geography test, applicable to a number of schools working under widely different conditions, has been approached with full realization of the difficulties involved. Perhaps the greatest difficulty of all is that offered by the subject itself. The field covered by the geography of the elementary school, as at present defined in the course of study, is so broad

*Abridged from School Document No. 14, 1915. Boston Public Schools. The investigation here reported was conducted under the supervision of Prof. L. O. Packard for the Boston Department of Educational Investigation and Measurement.

that no school can be expected to cover it thoroughly. For this reason it was necessary to limit the questions to those phases of the subject concerning the value of which there would be little or no difference of opinion.

At the present time we consider that the value of geography lies not so much in a knowledge of facts concerning the earth and its people as in an understanding of the various ways in which man's activities are influenced by physical environment.

As a result of the study of geography in the elementary school the pupil should gain:

1. An abiding interest in the different peoples of the world, their industries, their achievements and their relations to ourselves.

2. A mastery of geographic facts and principles sufficient to enable him to explain:

(a) The growth of the leading cities of a region.

(b) The development of important industries.

(c) The dependence of one part of the world upon another.

3. A breadth of mind which will lead to a sympathetic understanding of races and nations other than his own.

4. A working knowledge of the subject by a thorough training in the use of maps, texts and reference books so that he can work out new problems independently.

In short, geography should help the pupil to interpret his environment, which in the case of civilized man reaches out to all parts of the world.

The Questions in the Test

Below is given the two sets of questions used, following which each question will be discussed in detail. The detailed discussion will be limited to the results achieved by the eighth grade pupils.

Questions on United States

(An outline map of the United States was printed at the head of the questions).

1. Locate on the map the cities named at the right:

2. In the column marked "Products," write opposite the name of each city the name of a product for which the city is noted.

Cities	Products.
Minneapolis	
Pittsburgh	
Lowell	
New Orleans	
Duluth	
Galveston	
Lynn	

3. Give reasons for the growth of Minneapolis.

4. Below is given a list of articles which we use in our homes. Write below each word the name of the state in which that article is produced in large quantities.
   cotton, oranges, cane sugar, rice, coal, iron
5. Write on the map the name of each state which you have just written in answering Question 4.
6. Why do the states just east of the Rocky Mountains receive less rain than Massachusetts?
7. Explain the way in which the flood plains of the Mississippi river have been formed.
8. Why are these flood plains good for agriculture?
9. Locate New York City on the map. Locate San Francisco on the map.
10. Give reasons why the commerce of San Francisco is not so important as that of New York City.

Question 1.—Locate on the map these cities: Minneapolis, Pittsburgh, Lowell, New Orleans, Duluth, Galveston and Lynn.

The reason for the selection of a question of this kind needs little explanation. All will agree that pupils should know definitely the location of the most important cities of every region studied. No city was included to which objection was offered either by a member of the Committee on Standards in Geography or by any of the persons to whom the test was submitted.

Examination of the tabulated results shows that 11.6 per cent of the pupils tested located all of the seven cities correctly. What is of more significance, 7.2 per cent could not correctly locate any one of the seven cities. With 71 per cent as a passing grade, 53.5 per cent of the pupils passed. These results show the necessity of selecting a comparatively short list of important cities which all pupils should know thoroughly. Clearly, it is better actually to know a few places than to get a smattering knowledge of many which is dissipated before the end of the year. After examining the course of study it would be well for each teacher to select an amount of locational work which she feels necessary and which at the same time she feels practically every one of her pupils can master.

Having made careful selection of important places, the teacher's next problem is to fix in the minds of pupils their location. This should be done as fully as possible by combining the study of location with other phases of the subject. For instance, in the study of industries pupils should locate on outline maps, cities, important lakes, mountains, rivers, areas of production, routes of transportation and manufacturing centers which are involved. Much, too, can be gained by requiring accurate location by pupils when wall maps are used. The teacher must take great care to see that other members of the class as well as the pupil pointing get correct ideas of places located.

Question 2.—In the column marked "Products," write opposite the name of each city the name of a product for which the city is noted.

Cities	Products
Minneapolis	.....
Pittsburgh	.....
Lowell	.....
New Orleans	.....
Duluth	.....
Galveston	.....
Lynn	.....

In this question no city has been chosen which does not stand for at least one important product. There is little value in knowing the location of places to which no significance is attached.

The tabulated results show that 2.3 per cent were unable to associate a product with a single city named; 12.3 per cent gave correct products for all cities. The median amount of credit earned is 5.5. With 71 per cent as a passing grade, 62.8 per cent of the pupils passed.

It is interesting to note that the results for this question were somewhat better than for Question 1. In studying individual papers, however, it was evident that there was a close relation between the answers to the two questions. Very rarely did a pupil do well with one question and poorly with the other. Here is shown the great need of fixing in mind the location of places through the study of those facts which made the location of those places worth memorizing.

Question 3.—Give reasons for the growth of Minneapolis.

It is of some value to know the location of cities, and in case of the more important cities the products for which they are noted, but it is of greater importance for the pupil to be able to account for the development of a city in any given location. It is this latter phase of geography which makes a knowledge of the subject invaluable in that it enables the individual to explain the development and distribution of industries or occupations and thus leads to an understanding of conditions of life.

The results show that 43.6 per cent could give no reason for the growth of Minneapolis and 37.5 per cent could give but one reason, which is practically the median. With 75 per cent as a passing grade, only 2 per cent of the pupils passed.

Inability to explain the growth of one particular city may not necessarily indicate a serious lack of knowledge of the geography of a region, yet there is no doubt that after studying a

region the pupils should be able to account for the development of its most important cities.

Question 4.—Below is given a list of articles which we use in our homes. Write below each word the name of the state in which that article is produced in large quantities.

cotton, oranges, cane sugar rice, coal, iron.

Question 5.—Write on the map the name of each state which you have just written in answering Question 4.

From the study of the geography of a country pupils should gain a knowledge of its chief producing regions. While some products are pretty generally distributed there are a few which are produced in larger quantities only in some one section of the country. Question 4 implies that a pupil should be able to associate products with those portions of the country which produce them in large quantities and should be able to locate the regions with a reasonable degree of accuracy.

Less than 1 per cent of the pupils failed to associate a single product with its proper state. Eleven per cent made all associations correctly. With a passing grade of 67, 63.2 per cent of the pupils passed Question 4 and 45.2 per cent passed Question 5. Pupils were better able to associate places and products than to locate places accurately. More serious than mere inability to locate producing regions was the failure to associate products and climatic belts. This was shown by pupils who located cotton and rice regions in the northern part of the United States.

Question 6.—Why do the states just east of the Rocky Mountains receive less rain than Massachusetts?

Question 6 requires that pupils have knowledge of the manner in which rainfall is affected by mountains and by distance from the sea.

With 50 per cent as the passing grade, 87.5 per cent of the pupils passed. Although there can be little doubt that these fundamental facts of climate are taught in all schools, yet 12 per cent of the pupils gave no acceptable statement and less than 10 per cent gave complete answers. Although pupils may never have been asked to compare these two regions before, knowledge of individual cases is of little value if it cannot be applied to new situations.

Questions 7 and 8.—Explain the way in which the flood plains of the Mississippi river have been formed. Why are these flood plains good for agriculture?

Knowledge of the formation of land forms is valuable in that such knowledge, as in the case of flood plains, explains in large measure the influence of the region upon activities. The

fine soil, variety of material and level surface, all of which make a flood plain good for farming, are accounted for by its method of formation. With 80 per cent as the passing grade for Question 7, only one pupil in a hundred passed. With 75 per cent as the passing grade for Question 8, less than one pupil in a hundred passed.

Thirty-two per cent of the pupils were unable to give any explanation of the origin of the Mississippi flood plains and 15 per cent could give no reason why these plains are valuable for agriculture.

It was not to be expected that a large proportion of elementary school pupils would answer each of these questions fully, but it was thought that practically all pupils would give at least one acceptable fact in answer to each question.

Question 9.—Locate New York City on the map. Locate San Francisco on the map.

Question 9 involves simple location, as does Question 1. With 50 per cent as a passing grade, 88.9 per cent of the pupils passed. Although 72 per cent of the pupils located both cities correctly, yet it is astonishing to note that more than 11 per cent could locate neither New York City nor San Francisco.

Question 10.—Give reasons why the commerce of San Francisco is not so important as that of New York.

The importance of a commercial city, as is well known, depends largely upon three conditions: The character of the shore upon which the city is located; the character and accessibility of the interior which it serves, and upon its proximity to the shores of other commercial regions.

After studying the commercial cities of the leading countries, pupils should be able to sum up the conditions necessary to the development of such cities. Granting that such ability has been acquired, it should then be possible to apply these principles in explaining the advance of one commercial city over another. With 67 as the passing grade, 8.2 per cent of the pupils passed.

Practically 50 per cent could give no satisfactory answer to the question and but .3 per cent gave complete answers.

It was expected that the percentage of complete statements would be small but the number of total failures is surprising.

Questions on Europe

(An outline map of Europe was printed at the head of the questions.)

1. Locate on the map two seaports of European Russia.
2. Why are the seaports of Russia not so important as the seaports of England?

3. Of what value to the countries of Europe are their colonies in other parts of the world?
4. Why does England import large quantities of wheat?
5. Write on the map the names of the leading manufacturing countries of Europe.
6. Why has Germany become very important as a manufacturing country?
7. Why is the climate of Italy different from that of Germany?

With a passing grade of 50 per cent, 48.4 per cent of the pupils passed question 1. The table shows that more than 50 per cent were unable to locate either seaport and that only 19 per cent located both correctly.

With a passing grade of 75 per cent, only .3 of 1 per cent, i. e., three pupils in one thousand, passed question 2.

With 80 per cent as the passing grade, only .5 of 1 per cent, or five pupils in one thousand, passed question 3; 22 per cent could give no satisfactory answer and but .5 of 1 per cent made approximately complete answers.

With a passing grade of 67, only 8.6 per cent of the pupils passed question 4.

With 67 per cent as the passing grade, 72 per cent of the pupils passed question 5a and 73 per cent passed 5b.

With 75 per cent as the passing grade, 1 per cent of the pupils passed question 6; about 50 per cent could give no satisfactory answer and that but 10 per cent gave two or more acceptable statements.

With 75 per cent as the passing grade, only 1.9 per cent of the pupils passed question 7.

For the elementary school pupils taking the test on the United States the table shows:

1. That practically no pupil passed Question 8, indicating that it is probably outside the scope of the present geographical instruction.

2. That very few pupils passed Questions 3 and 10, probably to some extent at least for the same reason.

3. That from 45 to 63 per cent of the children passed Questions 1, 2, 4 and 5.

4. That in the case of only two questions (Nos. 6 and 9) did as many as 87 or 88 per cent of the pupils pass.

For the high and Normal School pupils taking the test on the United States the table shows:

1. That the questions which are difficult for the elementary school pupils are also difficult for the high and Normal School pupils and *vice versa*.

2. That in nine questions out of ten there were relatively

more elementary school pupils who passed than there were high school pupils.

3. That in six cases out of ten the first-year Normal School pupils did better than the high school pupils.

4. That there is not much difference between the results from the elementary school pupils and from the Normal School pupils.

The tabulation brings out the following facts:

1. That of the four questions on the United States most difficult for elementary school pupils (Nos. 7, 3, 8, and 10), three are classified as reasoning questions.

2. That of these four questions classified as reasoning questions only one was passed by a reasonable proportion of the pupils.

3. That there is no striking difference among the eighth grade, high school and Normal school pupils in their ability to reason about geographical data of the United States.

4. That what little difference there is, is in favor of the eighth grade pupils.

5. That with reference to Europe the high and Normal school pupils show a slight advantage over the elementary school pupils in the five reasoning questions.

From the above it is clear that in general the pupils succeeded in answering better the questions on location than they did the questions involving reasoning. Whether they answered the questions on reasoning as well as they ought to be expected to answer them is merely a matter of opinion.

Conclusion

1. Inability of pupils to answer satisfactorily several of the location questions seems to indicate too wide a distribution of effort on the part of teachers. The first step in the improvement of this condition is being taken through the definition of minimum essentials in geography. It is far better to teach thoroughly a few geographical facts than to spread instruction so thin that the results vanish in a short time.

2. The ability to associate with a place or product the geographical conditions which have made it possible should be expected of pupils. The test showed that pupils associated places and products better than they did products with climatic belts. This would seem to indicate that more emphasis should be placed on climatic conditions.

3. To what extent pupils can be trained to reason about geographical data is an unanswered question. They did not succeed in answering such questions as well as some expected they

would answer them. In this case, also, an attempt should be made to define to what extent and in what respects elementary school pupils should be expected to reason on geographical data.

4. The results from the first-year Normal School pupils are conclusive evidence of the wisdom of the action recently taken by the School Committee to provide a thorough course in geography in the Normal School for those preparing to be teachers. About six years elapse from the time the prospective teachers have a course in the geography of the United States until they enter the Normal School. Their knowledge of geography must be thoroughly reviewed if they are to be prepared adequately to teach that subject.

5. The results show how inadequate the customary examination or test in geography is to measure ability in geography. These results emphasize the need of standard tests for measuring ability in this subject.

Tropical Rains

Some years ago Woeikof made a detailed study of tropical rainfalls in which he brought out several important—and a few rather surprising—facts. For example, it appeared from Woeikof's investigation that general, moderate rains, lasting continuously for hours, and common in the "temperate zones", are known in many parts of the tropics and have ever been given special names there. Recently, Professor Oliver L. Fassig has made a study along somewhat the same lines, taking, for purposes of comparison, the island of Porto Rico and the State of Maryland. The special points in mind were the duration, frequency and intensity of the Porto Rican rains as compared with Maryland rains. It appears that tropical rains are of relatively short duration, by reason of the small number of cyclonic storms in the Tropics. Rains at San Juan last less than an hour, while at Baltimore the duration is eight hours. Tropical rains have a fairly uniform duration in all months. In higher altitudes, winter rains last longer than those of summer. On the other hand, the duration of "excessive rains" is greater in the Tropics, as is also their frequency. Excessive rains are more uniformly distributed through the year in the Tropics than in middle latitudes. The heaviest general rainfalls in Porto Rico are associated with West Indian hurricanes. The historic hurricane of Aug. 8, 1899, precipitated rainfall which has been calculated as equivalent to a weight of water of 1,113 tons per acre *(Mo. Wea. Rev.*, 1916, 329-337).

R. DeC. Ward.

THE COAL TRAFFIC OF THE GREAT LAKES

By E. L. Moran
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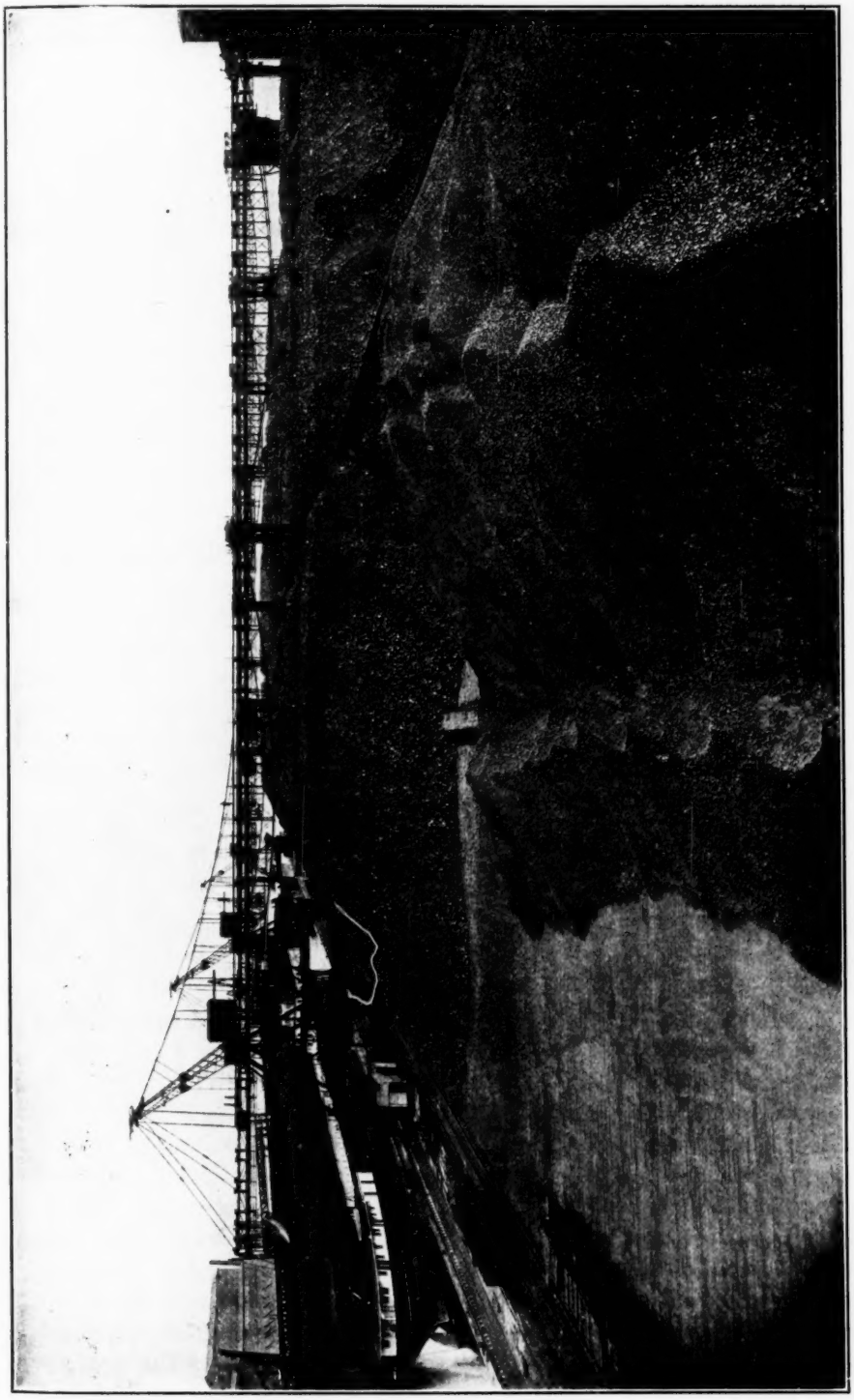
THE last touch in the completion of the North American continent was the creation of the Great Lakes, and they constitute one of its greatest physical features. These inland seas form the largest and most important interior waterway of the world. From Duluth and Superior, the extreme western ports of Lake Superior, to Ogdensburg, N. Y., the extreme eastern point of lake navigation in the United States, the distance traversed by the ordinary deep-draft vessels is 1,221 miles. A series of natural and artificial waterways connects these lakes with one another, and where there are differences in lake levels, locks have been constructed to permit interlake navigation.

The period of navigation averages a little over seven months. Although the lakes themselves are usually free from ice for a much longer time than this each year, the connecting rivers and straits do not ordinarily open up before April 15th, and they are frozen over by December 15th, forcing a suspension of all interlake traffic.

We have on these lakes an indefinite number of regular routes of transportation from one port to another, but the great bulk of the traffic movement follows several well defined trunk lines. The most important route is that from Lake Superior ports, through Lake Huron to ports on Lake Erie. The second route in importance is that from Lake Michigan ports to Lake Erie: Of all the commodities carried, the two greatest are iron-ore and coal. To the lake carriers, coal means west-bound cargoes. If it were not for this commodity, nearly all the vessels carrying ore and grain to the lower lake ports would be obliged to return light. At the present time coal constitutes about eighty-five per cent of the west-bound traffic through the St. Mary's Falls (Soo) Canals, and over three-fourths of all the west-bound traffic through the Detroit River. Shipments of coal through the Soo canals for the years 1911, 1912, and 1913 were as follows:

Year	*Anthracite*	*Bituminous*	*Total*
1911	2,060,209	13,272,667	15,332,876
1912	2,142,485	12,789,109	14,931,594
1913	2,744,574	15,878,364	18,622,938

Practically all of the coal traffic handled through this water route originates in the states of Pennsylvania, Ohio, and West Virginia. Other states in which soft coal is mined have strong



Coal Dock, Duluth, Minnesota. Storage capacity 1,000,000 tons; shipments from this dock aggregate two million tons per year.

rail competition to the western markets, and they find that there is no advantage in shipping by water. Hard coal, on the other hand, is all mined in a very limited district in eastern Pennsylvania and is, therefore, favorably situated in respect to the lake route. The following table showing the bituminous tonnages from the states above named, at intervals since 1901, all shipments destined for lake business only, gives an idea of the enormous tonnage transported and the rate at which it has been increasing:

Year	*Pa. tonnage*	*Ohio*	*W. Va.*	*Total*
1901	3,795,706	1,954,825	787,572	6,538,103
1905	7,443,883	2,062,692	2,109,262	11,615,837
1910	11,911,900	4,297,300	6,629,500	22,838,700
1911	10,911,900	4,019,544	7,171,200	21,782,685
1912	11,300,000	4,676,000	7,360,000	23,335,000
1913	13,415,473	6,176,624	8,736,586	28,328,683

Anthracite coal shipments by lake during the years 1906-1913 inclusive, were as follows:

Year	*Net Tons*	*Year*	*Net Tons*
1906	2,681,808	1910	3,639,368
1907	3,449,695	1911	3,917,419
1908	3,538,098	1912	4,204,741
1909	3,052,706	1913	5,033,696

The greater part of the above tonnage was carried from the mines to the lake ports by the Pennsylvania Railroad, the Baltimore and Ohio, Philadelphia and Reading, Lackawanna, Lehigh Valley, Erie, and New York Central systems. The coal is loaded usually in open, hopper-bottomed cars, of 100,000 lbs. capacity.

The principal shipping ports on Lake Erie are: Buffalo, Erie, Cleveland, Ashtabula, Lorain, Conneaut, Sandusky, Fairport, and Toledo; and on Lake Ontario: Charlotte, Great Sodus Bay, Little Sodus Bay, Oswego, and Ogdensburg, N. Y. At all of these ports there are special coal wharves, with modern appliances, for the transshipment of coal. Some of these harbors, from a navigator's point of view, are much better than others; but, as a rule, the water is of such depth and docking facilities are such that the largest vessels may be taken care of easily. The amount of coal handled at the Lake Ontario ports, however, is comparatively small, most of it being destined for nearby Canadian ports. The great bulk of the traffic moves through the

Lake Erie ports, and I give below bituminous shipments from the largest ports for the year 1913:

From Ashtabula	6,367,924 net tons
From Toledo	5,606,880 net tons
From Cleveland	5,151,824 net tons
From Sandusky	2,701,711 net tons
From Conneaut	1,929,512 net tons
From Huron	1,787,019 net tons
From Fairport	478,742 net tons
Total	24,033,612 net tons

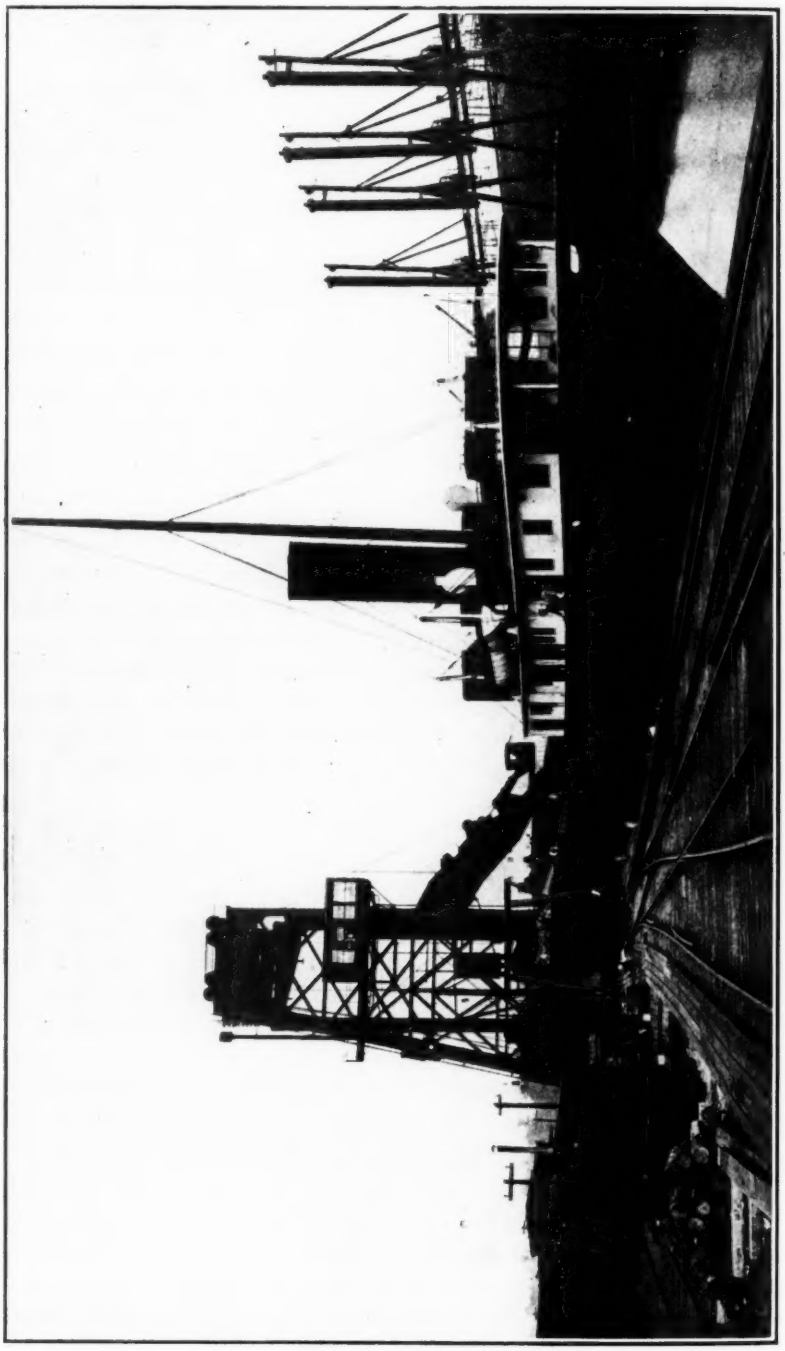
During the same year anthracite shipments from Buffalo exceeded 5,000,000 tons. But little soft coal is shipped from this port.

Modern Methods of Loading

Until very recent years the crudest methods existed in the loading of coal into vessels. Wonderful progress has been made lately, however, and no one need be surprised if, in the near future, coal is handled almost as expeditiously as iron-ore. But few improvements have been made in late years in loading anthracite coal; trestles equipped with pockets have long been in use, and vessels have been loaded with dispatch. Some of the largest carriers may be given a cargo from these trestles in three or four hours.

In the loading of soft coal, however, many innovations have been made. Until a few years ago soft coal was shoveled at a great cost from cars to buckets which were then swung onto the ship by derricks. Soft coal is difficult to handle. Lacking uniformity in size and often occuring in large masses, men found it very hard to shovel. Its physical texture also presented a serious problem; it could not be dropped any great distance without damage from breaking.

Because of the obstacles that had to be overcome, the primitive methods of handling soft coal persisted, but when the traffic assumed large proportions the expense of transshipment and the delays to vessels, made it so desirable to institute better methods that every effort was made to find them, and large sums of money were expended for this purpose. A satisfactory machine would have to attain high speed at a low cost, and with but a limited amount of breakage. These requirements seem to have been met by the car-dumping machines. In this type of loading machine the coal cars are run out upon the dock close to the side of the ship, and there clamped to the track of a mov-



Car Unloading Machine at Fairport, Ohio—Owned and operated by the Pittsburgh Coal Company. This machine picks up a steel car containing fifty tons of coal, elevates, empties, and returns it to the track in two minutes.

able platform. This platform and the car are then raised up and tilted bodily so as to deliver the coal with a minimum of fall into inclined chutes, which convey it to the vessel. The latest car-dumps, made by the McMyler Company, can handle over 1000 tons per hour; they are very economical to operate, and have reduced degradation to a minimum. Soft coal, of course, breaks up considerably more than anthracite, the breakage of the latter varying from 6 to 8 per cent. It needs scarcely be said that the value of coal is very much affected by this degradation, and constant efforts are being made to lower the above percentages.

Specialized Type of Boats

To transport such vast quantities of freight as are moved on these lakes, made up largely of heavy commodities such as ore, coal, and grain, ships of special and unique types have been evolved. Peculiar problems were presented to the navigator, but after years of experimentation they were solved, and a new ship produced which is better adapted to the requirements of the Lake service than any other would be. This new type is an extremely long and slender steel shell, of which an almost negligible portion in the stern and bow is taken up by engine and quarters. The long sweep of deck, clear of spars and superstructure, and pierced with hatches from one end to the other, admits of the utmost rapidity in taking and discharging cargoes.

Capacity of Boats

Since the building—in 1882—of the Anoka, the first steel freighter of the modern type, the plan of construction has remained substantially unchanged. The progress has been largely along the line of an attempt to surpass competitors in carrying capacity. To illustrate this increase in size a comparison is interesting. In 1890, the Matoa was the largest steamer on the Lakes, her average cargo being 2500 tons. By 1900 the carrying capacity of lake boats had leaped to 7000 tons, and four years later there was launched the Wolvin, a boat 560 ft. overall, with a capacity which enabled her, on her maiden trip, to transport 10,569 tons of coal from Buffalo to Milwaukee. In 1905 a number of vessels of about the same size as the Wolvin were built, some of which immediately proceeded to break all former records. The E. H. Gary, for instance, carried on one of her trips to Superior late that season 12,005 tons gross of coal.

In 1906 boats 600 ft. in length commenced to make their appearance, and carrying records were increased constantly. The DeGraff, in 1910, carried 13,333 gross tons from Ashtabula to

South Chicago. The present record was made by the Steamer Schoonmaker in July, 1916, when she carried a cargo of 14,520 tons. This vessel is 617 ft. long, with a beam of 64 ft., and a depth of 33 ft. On a draft of 24 ft. the cargo capacities of these larger ships would be nearly 20,000 tons, but as the present channels in some of the connecting rivers afford a maximum depth of only 20 to 21 ft., their capacity is reduced below 15,000 tons. The normal economic speed of these giants is about twelve miles an hour on load draft, making their running time from Lake Erie ports to Milwaukee and Chicago approximately 60 hours, and to Duluth and Superior about 70 hours. In connection with this, it may be of interest to state that the fuel consumed by the entire lake marine during the short navigation season has been estimated at over 2,000,000 tons.

Coal Receiving Ports

The principal coal receiving ports on the lakes are Superior, Duluth, Milwaukee, and Chicago. Although there are many very important smaller ports, such as Ashland, Green Bay, Manitowoc, and Sheboygan, the four ports first named receive the great bulk of the American tonnage. Their receipts during the calender years 1911, 1912, and 1913, were as follows:

Bituminous, Tons

	1911	1912	1913
Superior	4,734,003	4,515,185	5,532,856
Duluth	2,336,334	2,607,869	3,404,653
Chicago	560,093	831,579	934,898
Milwaukee	3,560,063	3,569,206	4,040,311

Anthracite, Tons

	1911	1912	1913
Superior	1,127,755	1,165,103	1,681,870
Duluth	236,813	296,882	363,286
Chicago	969,231	881,380	1,083,712
Milwaukee	1,005,750	952,117	1,148,920

To the above main harbors, it might be well to add the ports of Fort William and Port Arthur, which, as the extreme western Canadian ports are the chief distributing points for the Canadian Northwest. The receipts at these two places during the years 1911, 1912, and 1913, were as follows:

	1911	1912	1913
Fort William	1,941,404	1,448,142	2,086,537
Port Arthur	1,205,486	950,578	1,052,161

This tonnage represents a little more than half of the total receipts of all Canadian upper lake ports during these years.

Coal forms by far the largest item of receipts at Duluth and Superior, and the amount of capital invested in the large docks, with their extensive equipment, as well as the sums paid out yearly to the workmen employed, make the coal dock industry one of the most important at the Head of The Lakes. The coal handling machinery is of the most modern design, and the unloading capacities of almost every one of the twenty-nine docks at this point is above 5000 tons for 10 hours. Some docks even are able to take care of 16,000 tons in that time. It is a common occurrence for 10,000-ton boats to enter the harbor, discharge their cargoes of coal, reload with iron ore and depart within twenty-four hours. Because of this excellent dispatch, the wonderful harbor, and the ability of the carriers to always obtain return cargoes, the rate on coal to this port is 10c a ton less than to Milwaukee or Chicago. The tremendous growth of this traffic at Duluth and Superior since 1880, is indicated by the following record of receipts:

1880	60,000 tons
1890	1,780,000 tons
1900	2,672,577 tons
1910	8,171,644 tons
1913	10,991,669 tons

Bituminous coal forms about 85 per cent of the above.

Milwaukee is very favorably situated as a distributing point and has developed her harbor to such an extent that she is able to handle over five million tons of coal during the navigation season. Her docks have been increased in size and number until now she has a coal storage capacity of 2,500,000 tons. The most modern handling equipment is used and vessels are given very good dispatch. The coal-unloading facilities at Chicago, on the other hand, are inferior to those of the other important ports. The larger and more elaborate machinery, which has reduced the cost of handling coal to such a low figure, is not used extensively on the Chicago River. Only about one-fifth of the coal receipts of Chicago come by water, and the lake traffic seems to be unable to more than hold its own with the rail competition.

Unloading Machinery

As great advances have been made in unloading coal from vessels as in loading. In early days coal carried on the decks of vessels was wheeled off to the dock in barrows, while that stored

in the holds was hoisted by means of horse power. As early as 1867, the steam engine was used in hoisting, thus affecting considerable improvement. However, as larger boats were built, new methods had to be devised, and many ingenious minds were set thinking as to how to work out improvements. The chief results of these efforts to obtain something better are the modern rigs of the Brown Hoisting Machinery Co., Mead-Morrison Co., Hyle-Patterson Co., and Wellman-Seaver-Morgan. All of these enormous machines are equipped with self-filling "clam shells", the capacities of which range from 5 to 12 tons, and hand labor has been almost entirely eliminated. Many docks are now electrically operated, and it is with wonderful rapidity that cargoes are unloaded.

Cheapness of Lake Transportation

In this lake traffic we are furnished with a conspicuous illustration of the cheapness of water transportation as compared with rail. Lake steamers normally take cargoes from Lake Erie ports to Duluth and Superior, a voyage of approximately 1000 miles, for 30c to 35c a ton. The consequence is that the great coal fields of Iowa, Illinois, and Indiana are practically shut out of a large portion of the Minnesota and Wisconsin markets, although much nearer than the Ohio, West Virginia, and Pennsylvania fields, which ship from Lake Erie ports. At the low rate of ½c per ton mile, it would cost $3.00 per ton to move coal from the Illinois and Indiana fields by rail even as far as Minneapolis, and it is not moved except at times of extreme scarcity. But if the railroads lose this large traffic, they benefit in another way. Being the largest users of coal, they store up for themselves huge supplies at the lake ports, and save money because of the cheapness of water transportation.

Then again, the water routes of the Great Lakes may be considered as a most valuable auxiliary to the railroads, for the vast majority of the freight handled on the Lakes must use them. It is either delivered to the port of shipment by the railroads, or it is received at the port of arrival for transportation to destination.

Freight sent by boats makes quicker time, as a general thing, than when forwarded by railroads. Particularly when it is considered that all-rail shipments would have to pass through Chicago and other crowded junction points, is it realized what a saving in time as well as in money is made by using the water route to the Northwest. In fact, it might be said that regardless of cost the enormous tonnage forwarded to that section could

hardly be accomplished by the rail routes; certainly not as they are constituted at present, for to undertake to transport by rail anything like the quantity of coal now moving to the Head of the Lakes would paralyze the movement of merchandise over the railroad lines concerned.

COTTON

By Adele R. Gavoille
Madison, Wis.

COTTON is one of the most valuable crops grown in the United States and is our largest single item of export. The latest statistics which can be called normal show that the total exports of domestic raw cotton and linters from the United States for the year ending June 30, 1914, were 9,500,000 bales—55 per cent of the total supply—valued at $610,475,000 and exports of cotton manufactures valued at $51,460,000.

The three leading cotton ports, from the standpoint of net receipts, were Galveston, New Orleans, and Savannah which together shipped about two-thirds of the total exports of raw cotton. Of the quantity exported nearly four-fifths went to three countries—the United Kingdom, Germany, and France. Among the other smaller purchasers of this American product were listed Italy, Spain, Belgium, Russia, the Netherlands, Japan, and Canada.

Of the total value of our exported cotton manufactures nearly three-fifths were cloth and one-fifth clothing and other wearing apparel. The leading countries importing these American products, according to rank, were the Philippines, China, the United Kingdom, Cuba, Haiti, Germany, and Mexico.

Manufacturing

Cotton has been used since the earliest times in the manufacture of textiles, but its use until after the invention of power-driven machinery for spinning and separating lint from seed was very limited. Of this machinery the cotton gin especially has played a preponderant part in the increased production and mill consumption of cotton during the last century.

In 1811 the world's estimated production of cotton was 1,100,000 bales. In 1914 the total was over 20,000,000 bales of 500 pounds each. In the increase in quantity of cotton consumed the United States leads the world, its increased consumption being greater than that of the United Kingdom and equivalent to that of the whole continent of Europe.

In the growth of active spindles, also, the United States shows the largest increase, its number of 32,000,000 being double that of 1890. Of these spindles about eleven-twentieths are operated in the New England States, approximately two-fifths of them in the cotton-growing states, about one-sixteenth in all the other states. The greatest concentration of the industry is in Massachusetts which has more than one-third of all the cotton spindles of the country and consumes nearly one-fourth of the 5,500,000 bales, the total quantity consumed. It contains Fall River, the leading cotton manufacturing center, and the two counties—Bristol and Middlesex—which with Providence County in Rhode Island, have more than three-tenths of all the cotton spindles of the United States.

In the number of cotton spindles, South Carolina with about one-seventh of the total number ranks second, North Carolina third, Rhode Island fourth, Georgia fifth, New Hampshire sixth, and Connecticut seventh. Because of the greater ease in operating and because of the greater amount of fiber each ring spindle consumes, about seven-eighths of the spindles used in 1914 were of this kind while only about one-eighth were mule spindles.

Before the introduction of oil mills cotton seed was practically valueless, except for planting purposes. Now the crushing of the seed is an important part of the cotton industry. Statistics show that 870 establishments were engaged in the business during 1913; that in 1914 more than 4,750,000 tons were crushed; that the total value of the cotton seed products—the oil, an edible product, and the cake, excellent cattle feed—was $155,500,000.

Imports

Practically all of the raw cotton consumed in the United States is produced in the country, but small quantities for special purposes are imported. The chief country from which our cotton imports come is Egypt, which furnished nearly one-half of the 280,000 bales imported in 1914. Other sources of our cotton imports are Mexico, which furnished one-third; China, Peru, and India.

Egyptian cotton is noted for the great strength of its long fiber. It is freer from trash and short fibers than American cotton and it consequently involves less waste in combing and carding. It is used here principally for mercerizing and for other processes that give a high finish to cloth, also in the manufacture of thread and other similar articles which require a long

fiber of great strength and for which no other type of cotton, except sea-island, has proved suitable.

Peruvian cotton is mixed with wool in making woolen textiles, while Indian and Chinese cotton is to some extent mixed with the American upland in the manufacture of the cheaper grades of goods.

Besides raw cotton, this country imports cotton manufactures. The value of those imported into the country in 1914 was $69,400,000. Of these imports the United Kingdom, Germany, France, and Switzerland, in the order named, furnished the greater amount—96 per cent of the total.

Laces, edgings, embroideries, and the like formed about half of the total value of the imported cotton manufactures. Switzerland led in the furnishing of these. Germany furnished practically all of the knit goods, France about one-fifth of the cloth, and the United Kingdom three-fifths of the cloth.

TRAVEL BOOKLETS AS AN AID TO GEOGRAPHY

By Howden Harry Williams
Bureau of Education, Manila, P. I.

STUDENTS who do not care for geography may often become interested by the reading of travel literature. Every large railway in the United States has for free distribution beautiful booklets describing points of interest along its lines. Particularly is this true of the transcontinental lines and those of New England. The steamship lines on the Great Lakes and the river steamboats companies likewise issue folders of interest. In the outing periodicals may be found advertisements of various resorts, some of them in most out-of-the-way places, and all of them offering free booklets. This would not be money wasted for the advertisers, for the youthful readers may later prove to be among their best customers. The coast-wise lines issue folders that describe with interest the Panama Canal, and some of the fruit importing companies publish reading matter about nearly all of the West Indies and countries on the north coast of South America. Further advertising matter about South America is difficult to find, as the tide of tourist travel has only begun to turn that way since the beginning of the European War. A few copies of the Bulletin of the Pan-American Union, published at Washington at 25c per copy will stimulate more interest in Central and South America than all of the matter to be found in most geography texts.

Although the war has nearly stopped the tourist from going to Europe, the steamship and tourist agencies still have for dis-

tribution many copies of the folders that they had before the war. These will cover nearly the whole of Europe, and a perusal of the advertisements found in Cook's Traveller's Gazette will show the addresses of hotels and firms in Norway, Greece and Spain that are anxious to have strangers visit those countries. The Swiss Government maintains in New York a bureau whose sole business is to supply folders and maps to those interested in Switzerland. The railways, both in England and on the Continent, send out free of charge, large quantities of maps and illustrated matter. Particularly the Midland Railway of London and the Furness Railway of Barrow have artistic folders that are of interest to the English as well as to the geography classes. The Paris-Lyons-Mediterranean Railway has booklets that could be sold for a good price if they did not bear the trademark of the Company.

The quantity of advertising matter relative to Asia is nearly as large. The railways of India send booklets advertising their lines. The largest are the Great Indian Peninsular and the East Indian, both of Calcutta. It will take about ten weeks to hear from them, but the result is worth the time. Cook's describe points of interest from Ceylon to Kashmir. They have branches at Rangoon, Hong Kong, Canton and the Philippines. Their Shanghai office has many folders of trips in China, including the Yangtze, Hankow, Peking, the Great Wall, and through Manchuria down to Korea. The International Sleeping Car Company, with offices in Yokohama, are agents for the Trans-Siberian Railway, from Vladivostok to Petrograd. About Japan there is a wealth of material, for the Japanese are good advertisers. The Welcome Society at Yokohama and the Imperial Government Railway at Tokio, have maps, guide-books and pictures, and they pay the postage. Their advertisements are as artistic as any made. And at Honolulu, the Hawaiian Promotion Committee, has a room in the Alexander Young Hotel, with a man whose sole business is to send out literature describing the beauties of the Hawaiian Islands.

Very little can be obtained about Africa, though the Cape Peninsula Publicity Association at Cape Town and the Boma Trading Company, Dewar House, Haymarket, London, S. W., have good booklets about South Africa and British East Africa. Again, Cook's at Cape Town have some interesting folders that take one from that city to the terminus of the railway near the Equator. In Australia the Immigration and Tourist Bureaus in any of the several capitals will send booklets describing all phases of the country. The Koninglik Paketvaart Matschaapij

of Batavia, Java, has a large paper bound book in English that gives interesting information about all of the Dutch East Indies.

It is not necessary to give every company by name, for a little reading of the travel and outing magazines will give the teacher plenty of information. A postal will bring the desired material from nearly every one addressed. A postal with a one-cent stamp affixed, will bring a big envelope from a foreign country, oftentimes containing as many pictures as the whole geography text, and sometimes they are a good deal better. And the maps are good, too. At the outbreak of the present war, I had on hand a number of maps from the State Railways of Belgium, and we were enabled to follow the movements of the armies much better than we we could have done with an atlas, as the maps were on a much larger scale.

Now if the teacher has invested a dollar or so in this material, which will probably have resulted in an overworked postman and a big basket of mail, what shall be done with it? It can be used as supplementary reading, for the texts contain very meager information about certain regions. The folders are up-to-date and made to attract the possible visitor. They will do much for the student. The beautiful and interesting features are attractively presented and will keep the student's attention. Tours on paper may be taken, and the important topics discussed by the teacher, while a careful study of the excellent maps will be of great value. The pupil will see that many people are with good reason interested in regions other than his own. He will note the most attractive, and often the most important features of the countries he studies in this way, and later may go out into the world and see some of them for himself. This feature requires only a small outlay and is well worth the money invested.

COALING AT NAGASAKI

By Walter N. Lacy
Foochow, China

NAGASAKI is said to be the cheapest coaling station in the world. Hence it is not surprising that the trans-Pacific liners make this a port of call on both east- and west-bound voyages, and load up with sufficient coal to supply their furnaces until they can again reach Nagasaki.

The harbor of Nagasaki is an excellent one. The city is situated at the head of a bay on the southwestern side of the

island off Kyushu in southern Japan, and the deep bay is surrounded with high hills, and its two entrances guarded with small and rocky islands. The natural protection of the harbor, its spacious and navigable waters, and the abundance of coal found in the island, have all combined, naturally, to cause the Japanese to include this among the fortified districts of the islands. And the abundance of coal, the harbor advantages, and the cheap labor available, have combined to make this an attractive coaling station; and here vessels call for coal, even though they have no freight to be loaded or discharged, and even when an epidemic of cholera in the city makes it necessary to keep the ship quarantined from the shore while in the harbor and to have all the handlers of coal disinfected and clothed in new clothing before the ship could be approached and coaled.

One of the most interesting sights to be seen anywhere is this process of coaling a ship in the harbor of Nagasaki. No sooner does the ship drop anchor than she is surrounded by a fleet of coal barges, each carrying from 15 to 33 tons of soft coal. They line up along the vessel, fifteen or twenty on each side, with stern to the vessel. Up to each coal chute on the vessel's side is erected a series of small platforms, forming a series of steps from barge to chute, and all hung by ropes from the vessel's side. On these platforms men and women stand, one above the other, and others form a line connecting with the points on the barge where the coal is shovelled. As rapidly as cheap straw baskets (holding a little less than a half bushel, perhaps) can be filled with coal, these baskets are passed from one man or woman to the next until, after a journey of about five seconds, the coal is dumped into the chute on the vessel's side, and the empty basket is dropped onto the barge to be refilled. These baskets of coal are passed on an average rate of 38 per minute, the number reaching as high (in two instances recently observed) as 59 per minute; at this rate these men and women are able to unload a barge in about an hour, with a gang of twenty to thirty persons for each barge. As soon as one barge is emptied another takes its place, and the crew climbs over to the new barge and repeats its hard work for another hour. In this manner one of the largest ships on the Pacific recently loaded about 3500 tons of coal in six hours.

It is the abundance of coal, together with the economic conditions of crowded Japan (making labor cheap), which make possible this primitive, yet economical and interesting method of coaling ocean vessels.

THE TEA OF THE ORIENT

NO accurate figures of the world's total production of tea can be given, but the quantity in exchange between nations amounts annually to about 1,000,000,000 pounds, worth to the producers about $150,000,000, and costing the consumers over twice as much. China and Japan, by the average American, are considered the greatest tea producing countries, as most of our imports are from those countries, but so rapid has been the development of the tea industry of late years in British India and Ceylon that India now leads the world in tea exportation, with Ceylon crowding China for second place, and Japan in the fifth:

WORLD'S ANNUAL TEA EXPORTATIONS

1. India (1915-16)	338,470,262 pounds	37½% of total
2. China (1914)	199,439,733 pounds	22 % of total
3. Ceylon (1914)	193,583,592 pounds	21½% of total
4. Java (1914)	71,449,000 pounds	8 % of total
5. Japan* (1914)	69,657,712 pounds	7½% of total
6. Formosa* (1913)	29,783,812 pounds	3½% of total
Total	902,384,111 pounds	100 %

*Total production.

In actual production China ranks easily first with an estimated consumption of five pounds per head of population:

ESTIMATED ANNUAL TEA PRODUCTION IN MILLIONS OF POUNDS

1. China	1,710	70¼% of total
2. India	353	14½% of total
3. Ceylon	195	8 % of total
4. Java	73	3 % of total
5. Japan	70	3 % of total
6. Formosa	30	1¼% of total
	2,431	100 %

The per capita consumption among the different nations is estimated about as follows:

Australia	7 pounds per person
United Kingdom	6 pounds per person
China	5 pounds per person
Canada	4 pounds per person

Holland .....1.75 pounds per person
United States .....1.4 pounds per person
Russia .....1.25 pounds per person

Tea is largely grown in China in family gardens for home use. Its origin seems to have been an attempt to make pleasant the habit of drinking boiled water, a necessity recognized long ago by a population living on a land in which sanitary conditions are greatly affected through density of population and primitive customs.

Chinese tea is grown chiefly in central China. It is usually picked three times a year, the first growth a light crop in early April, the second about the middle of May, and the third in August. The choicest first pickings are so highly prized at home that they are practically never exported; the later pickings are prepared for foreign consumption.

The difference between black and green tea is merely a matter of curing, although the two kinds are rarely grown in the same locality.

Tea requires fertile but well drained soil along with much moisture, a combination of conditions usually furnished best upon hillsides. This fact in combination with the large amount of labor required, makes it a crop admirably suited for Japan where the level land is largely given over to cultivation of rice and other grain crops.

About 650,000 acres are now under tea cultivation in India, four-fifths of this being in the northeastern part in eastern Bengal and Assam, a portion in northern Bengal and the rest in south India on the Nilgiri hills. The tea gardens are situated either on the hills or in the plains, and the distinction is not merely topographical for location has an important bearing on the finished product. The tea from the hill districts is of fine flavor but less is produced per acre than from the plains and the return is much less, in proportion.

Scientific management has evolved the following system of tea preparation: The tree or bush is kept down by pruning to a height of from four to six feet so that the leaves can be picked by hand. Small oil cells give the leaf its flavor and the stimulating quality comes from a substance called theine which much resembles the caffeine of coffee. The new growth of end leaves is plucked by hand and carried to the wilting houses where it is spread on wire screens in a well ventilated shelter. They are curled or rubbed by hand or in a rotary machine and the wet curled leaves are then spread to a depth of three inches on con-

crete floors in darkened cellars and a process of fermentation takes place which is to give the tea a certain color and a certain flavor. When the desired point is reached the leaves are placed in ovens and dried, then sifted, selected, sorted and finally boxed for shipment by boat or rail to the central markets of Calcutta and sold locally or for export.

Ceylon, with its more humid climate, perhaps furnishes the best tea growing region of the world, and a production of as much as 1000 pounds per acre has been reached there, plucking being possible every two weeks throughout the year. The growth of the industry has been remarkable. In 1867 there were 10 acres of tea, and in 1915, 403,000. The Ceylonese method of tea growing is typical of the most successful method of prosecuting tropical industries. More than half of the plantations are owned by corporations and practically all are managed by English superintendents. The average plantation is 300 acres as against a fraction of an acre in China. The work is done by coolies, men, women, and children, many of them families from Southern India who return to their homes across the straits after a period of work gives them a little money. The intensity of the tea industry is shown by the fact that about 600 square miles of tea plantation employs about 400,000 coolies or about one to the acre.—[Excerpted from *Commercial America.*]

TIME ALLOTMENT FOR GEOGRAPHY IN DIFFERENT CITIES

(Compiled by the St. Louis Committee, 1915)

Grade—I	II	III	IV	V	VI	VII	VIII	Total
			Number of Recitation Periods					
Boston			150	150	150	150	90	690
Worcester		60	80	120	125	135	135	665
Cincinnati		80	140	140	100	100	80	660
Rochester		67	167	107	167	77		644
Jersey City.....20		80	100	165		135	130	630
Syracuse		100	150	150	130			580
Tacoma 25	25	25	105	87	200	75		542
Chicago			75	150	125	100	60	510
New York.....			135	120	120	120		495
Pittsburgh				120	120	150	100	490
St. Louis.....		67	80	80	80	60		367

PLANNING A COURSE IN GEOGRAPHY

Questions considered by the Nebraska Committee.

1. What phases of Nebraska environment and life should we have prominently in mind, in selecting geography material for a state course of study?

2. Would it be advisable to plan for variations in the course of study adapted to different regions in the state? Or, should an entirely uniform course be planned for an area as large as our state?

3. What should be the basis of determining whether material is geographic or not?

4. Shall we assume that the majority of teachers using this course of study are untrained—that is—shall we attempt a self-teaching outline?

5. What interests of children should be considered in selecting geography material?

6. How should the child's stages of development affect the choice and presentation of geography material?

7. What should home geography include? In view of the fact that the content of home geography must vary greatly with locality, how can a practical working outline be prepared?

8. Should we handle regional studies by means of the discovery and solution of problems?

9. Should this course include the statement of some type problems?

10. When should the facts of mathematical geography be presented? Should these be presented as general geographic principles or should they be introduced in connection with the solution of regional problems?

11. When should the important facts of physical geography be presented? Should these be presented as facts in themselves, or in connection with regional problems?

12. Do you approve of the usual plan of covering the field twice in the course?

13. Should separate courses be planned for town and rural schools?

14. In what year should formal geography begin?

15. Should geography as a regular subject of study be dropped at the end of the 7th year?

16. How should the "where" element in geography be handled? In what grades should it be stressed?

TO OUR SUBSCRIBERS

The growth of the subscription list of the Journal has been notable during the past two or three months, and we have not been able in all cases to begin a subscription with the number requested by the subscriber. As long as we had the magazines we began subscriptions with the September or October number whenever requested to do so. We did the same with the November number as long as the supply lasted, but doubtless some people were not able to get the back numbers.

Will subscribers please note the following plan which is being followed by the present circulation manager with reference to discontinuances; a renewal blank is enclosed in the magazine of the month in which the subscription expires. Even if no renewal is received during that month the Journal is sent the following month to the subscriber, and a "final notice" slip is enclosed in the magazine notifying the subscriber that if a renewal is not received during the month the magazine will be discontinued. It is believed that two notices will suffice to prevent any subscriber's having his magazine discontinued against his wishes. We are exceedingly anxious to retain our subscribers, but the very narrow margin upon which the magazine is conducted makes it impossible to send the magazine to a large number of people whose subscriptions have expired and who have not signified their wishes for the future. The new circulation manager is not sending out bills as has been the practice in the past, believing that the two notices enclosed in the magazine are sufficient.

We greatly appreciate the assistance of the people who have recommended the Journal to their friends, and by whose aid our circulation has had a healthy growth. We also appreciate very much the hearty endorsement which has been given to the Journal by leaders of the state councils in different parts of the country, and particularly by the leaders of the National Council of Geography Teachers.

The increase in our subscription list apparently is coming more than ever before from teachers in the grade schools. We shall, therefore, give more attention than before to the publication of articles and items designed especially for them.

We invite any of our subscribers to become contributors to the columns of the magaine. Of course, we cannot promise in advance to use all material that is submitted, but we shall be glad to use that which is suited to the needs of the Journal. We especially invite the sending in of news items or brief geographical notes which will be of interest to other teachers.

NEWS NOTES

Meeting of the Massachusetts Branch of the National Council of Geography Teachers

On December 2nd, in the lecture room of the Boston Public Library, the Massachusetts Branch of the National Council was formally organized, and over 100 persons became members. Sixty-five of those persons, who had not already joined the National Council, did so at that time. The officers of the Executive Committee of the Massachusetts Branch are:

Mr. L. O. Packard, Chairman
Miss Nellie B. Allen
Mr. Sumner W. Cushing
Miss Elizabeth Fisher
Mr. Arthur L. Gould
Mr. Charles P. Sinnott
Mr. W. W. Atwood, Secretary and Treasurer

The program for this opening meeting was as follows:

"Geography in the Junior High School"—Professor Ray Hughes Whitbeck, of the University of Wisconsin; Editor of the Journal of Geography.

"The Racial Factor in the Development of South America"—Professor Walter S. Tower, of the University of Chicago.

"The Teaching of Geography in Elementary Schools"—Mr. Charles P. Sinnott, of the Bridgewater Normal School and the Hyannis Summer School.

These papers were thrown open to discussion, and there was active participation by a number who wished to express their appreciation of the material presented by the speakers, and their enthusiasm over the promotion of the work undertaken by the National Council. Running through the entire discussion from the floor there was a strong sentiment that geography work must not be omitted from the curricula of the upper grades or junior high schools. The larger, deeper meanings of geography cannot be grasped by the children in the 6th grade. The significance of geographic factors upon history, upon international relationships, upon racial development, the larger concepts of the climates of the world, of mathematical geography, and of physical geography, will be lost in the educational system that closes its work in geography too early.

The Executive Committee proposes to hold several meetings throughout the state during the present school year. Special programs will be prepared for these meetings, and further opportunities offered for teachers to join the organization. The

hope and ambition of the officers is that geography will appear as a special topic for consideration at each of the state and county meetings from now on. Special committees have been appointed to attend to these matters.

(Signed) WALLACE W. ATWOOD,
Secretary and Treasurer. Harvard University.

RECENT PUBLICATIONS

FRANCISCO THE FILIPINO. By Burtis M. Little. 104 pp. Illustrated. American Book Co. 1915.

A charming and instructive story which illustrates the life and customs of the Filipinos. The author has spent two years in the islands and is very familiar with the life of the people. He is to be commended for having written an instructive book for boys and girls and at the same time not fallen into the stilted phrases common to writers for young people. F. E. W.

ECONOMIC GEOLOGY. By Heinrich Ries. John Wiley & Sons, New York, 1916. 827 pp., $4.00.

Ries's Economic Geology is a valuable book for teachers of commercial geography to have personally and to place on the high school or normal school reference shelf in order that their students may look up mineral resources for special topic work. The book devotes 137 pages to fuels—coal, petroleum, and natural gas; 138 pages to construction materials—iron, building stones, cement, and clay products; 24 pages to fertilizers; 10 pages to underground waters; and an adequate space to the precious and other metals, to abrasives, etc.

The origin of each of the ore deposits and non-metals is discussed adequately, distribution is well shown on an extensive series of outline maps, and the references to other books and papers is unusually complete. The photographs and cross-sections would make excellent lantern slides, many of the former being taken by the author, who described most of the mineral resources from personal knowledge, based upon his long experience as teacher and investigator. LAWRENCE MARTIN.

AN INDUSTRIAL GEOGRAPHY OF BRITAIN. By the same author and publisher as above. 143 pp. 10 pence. 1915.

The author says of his little book, "Perhaps a better title would have been, 'Nature's Gifts to Britain.'" The book is an effort to show the influence of the physical features of Britain upon her industrial development and is intended to accompany the author's Industrial History of Great Britain.

The Geographical Review

the monthly magazine of the American Geographical Society, is a periodical of unique interest to teachers of geography. The special articles, of which four or five appear in each issue, are written by authorities in the various branches of geographical science. The illustrations are of the highest order, and the maps, hand-drawn and occasionally in color, are unsurpassed. Some of the articles that will appear in 1917 are:

A Vegetation Map of the United States
By Forrest Shreve, Desert Botanical Laboratory

A Pilgrimage in Northeastern Africa
By Prof. William H. Hobbs, University of Michigan

The Eskimos of Northern Canada
By Diamond Jenness, Ethnologist of the Stefansson Arctic Expedition

Short items of topical interest constitute a monthly geographical record. Concise in form and of current importance, they are directly useful in the classroom. The section of the *Review* entitled "Geographical Publications" is indispensable to those wishing to keep pace with geographical progress. It is an annotated bibliography arranged under a regional classification. It includes practically every new book and article of direct or indirect geographical bearing.

The yearly subscription for the *Review* is $5.00; single copies are 50 cents each.

The American Geographical Society has also inaugurated a series of books, of which at least one will be published annually. The first of the series is "The Andes of Southern Peru," by Dr. Isaiah Bowman, Director of the Society. The second, now in press, is "The Frontiers of Language and Nationality in Europe," by Leon Dominian.

The magazine and the annual monograph free of charge are among the privileges enjoyed by Fellows of the Society. Teachers and others interested in geographical affairs are invited to become Fellows. The annual dues are $10. Full particulars regarding Fellowship will be sent on request.

THE AMERICAN GEOGRAPHICAL SOCIETY

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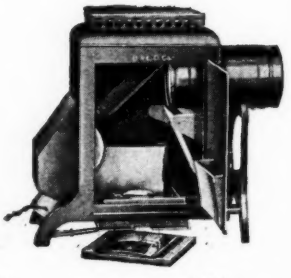

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Vol. 1 No. 3 *IN THE INTEREST OF BETTER MAPS* Feb. 1917

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The minds of students everywhere are keen to absorb the details concerning countries where battles are raging for conquest or defense.

To properly focus and direct this new interest in geography every school room should be equipped with plenty of large and accurate maps. Maps help to visualize and make more real the great sweep of transpiring events.

With maps to study in connection with current events one sees the influence of mountain ranges, rivers, valleys, plains, climates, and other geographical forces in determining the march of world affairs.

One of the most disastrous things which can happen to a child educationally is to allow his enthusiasm over any subject to wane without bearing fruit. Now and for years to come all youngsters will evince a natural eagerness to study maps which mark the spots where history has been or is being made.

To crystallize this unusual interest by furnishing proper maps now when they are most needed is the duty of all educators who have the welfare of their pupils at heart. Why were so many of even our adult population caught at the beginning of the war unprepared to understand the import of European news? Simply because in their youth they had not had access to good maps. Maps mean more to the student of today than they have ever meant before.

The peoples of the world are being brought commercially and socially nearer every day. Pupils who have good maps to study now while interest in world events is at its height will be the better equipped to take their places in world affairs. The importance of having good maps in the schools now cannot be too strongly emphasized.

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